

REMARKS

Favorable reconsideration and withdrawal of the objections and rejection set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Drawings

The drawings are objected to because Figures 8 through 12 should be designated by a legend such as --PRIOR ART--.

In response, a Submission of Corrected Sheets the Drawings is being filed concurrently herewith in which Figures 8 through 12 have been labeled --PRIOR ART--. No new matter has been added. It is respectfully submitted that the objections to the drawings have been overcome.

Title

The title has been objected to as not being descriptive. In response, a new title "IMAGE FORMING APPARATUS USING AN ORDERED SET OF FIRST, SECOND AND CHARGING AC PEAK TO PEAK VOLTAGES", which is more clearly indicative of the claimed invention, is presented herein for the Examiner's consideration and approval.

Restriction Requirement

The restriction requirement, restricting Claims 13 through 17 and 20/13 out of the application is deemed proper and made final. In response, Applicants again respectfully request withdrawal of the restriction requirement for the reasons given in the January 6, 2006, response.

Claims Status

Claims 1 through 3, 5 through 12, and 20 remain pending in the application. Claim 4 has been canceled. Claims 1 through 3 and 9 have been amended to even more succinctly define the invention and/or to improve their form. It is respectfully submitted that no new matter has been added. Claim 1 is the only independent claim pending in the application.

Claim Objections

Claims 9 and 10 are objected to for the reasons set forth in the Official Action. In response, Claim 9 has been amended to overcome the grounds of the objections. It is respectfully submitted that the objections have been overcome.

It is acknowledged with appreciation that Claims 2 through 4, 6, 8 through 12, 19, and 20 are merely objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. The claims remain in their dependent form, inasmuch as it is believed that Claim 1 from which they depend will be found to be allowable.

Art Rejection

Claims 1, 5, 7, and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,640,063 (Adachi, et al.) in view of U.S. Patent No. 5,715,499 (Yamazaki, et al.).

Response to Art Rejection

The rejection is respectfully traversed.

Independent Claim 1 is directed to image forming apparatus in which a rotatable latent image bearing member bears a latent image. A charging unit contacts the latent

image bearing member and is provided with a voltage applied thereto to charge the latent image bearing member. A cleaning unit that contacts the latent image bearing member is adapted to clean the latent image bearing member. An alternate current detecting unit is capable of detecting an alternate current flowing between the charging unit and the latent image bearing member when a first AC voltage is applied to the charging unit. A peak-to-peak voltage of a charging AC voltage for charging an area constituting an image forming area on the latent image bearing member applied to the charging unit is selected based on an alternate current detected by the alternate current detecting unit. When a print signal is supplied to the image forming apparatus, the first AC voltage, a second AC voltage and a charging AC voltage are applied to the charging unit in order. The second AC voltage has a peak-to-peak voltage higher than that of the first voltage.

In Applicants' view, Adachi, et al. discloses image forming apparatus that includes an image bearing member and a charging member in proximity or in contact with the image bearing member. A frequency of an oscillating voltage is a first frequency when a peripheral speed of the image bearing member is a first peripheral speed, and the frequency of the oscillating voltage is a second frequency when the peripheral speed of the image bearing member is a second peripheral speed. A determining device determines a first peak-to-peak voltage of the oscillating voltage corresponding to the first peripheral speed and the first frequency and a second peak-to-peak voltage of the oscillating voltage corresponding to the second peripheral speed and the second frequency, based on first, second and third alternating currents flowing in the charging member in use of the first peripheral speed and the first frequency. The determined peak-to-peak voltages are applied to the charging member.

In Applicants' opinion, Yamazaki, et al. discloses image forming apparatus that includes an image bearing member and an image forming device for forming an image on the image bearing member. The image forming device is provided with a charging member disposed in contact or proximity with the image bearing member to electrically charge the image bearing member. The charging member is supplied with an oscillating voltage, and there is provided a voltage set period in which a peak-to-peak voltage of the oscillating voltage is higher in a period in which the image is not formed on the image bearing member than in a period in which the image is formed on the image bearing member.

It is a feature of Claim 1 as currently amended that, when a print signal is supplied to an image forming apparatus, a first AC voltage, a second AC voltage and a charging AC voltage are applied to the charging unit in that order, the second AC voltage having a peak-to-peak voltage higher than that of the first voltage. Advantageously, the potential on the latent image bearing member becomes stable because the second AC voltage is higher peak-to-peak than that of the previously applied first AC voltage which may make the potential on the latent image bearing member unstable because the first AC voltage is small peak-to-peak,

Adachi, et al. may disclose applying different AC voltages during a pre-rotation period and selecting an AC voltage based on the current in a circuit when the different AC voltages are applied. Adachi, et al. only teaches selecting an optimum AC voltage for image formation. As recognized by the Examiner, Adachi, et al. does not teach applying a second AC voltage having a higher peak-to-peak voltage during a time period after selecting an optimum AC voltage for image formation and before the start of image

formation. Accordingly, it is not seen that Adachi, et al. discloses applying, when a print signal is supplied to the image forming apparatus, a first AC voltage, a second AC voltage and a charging AC voltage to a charging means when a print signal is supplied or of the second AC voltage being a higher peak-to-peak voltage than that of the first AC voltage.

Yamazaki, et al. discloses that at least one of amplitude, frequency or current for a charging member is switched between an image forming charge voltage (e.g., $V_{pp} = 1800$ V) when the charging surface of the charging member faces areas on an image bearing member to which an electrostatic latent image is formed and a “cleaning bias” (e.g., $V_{pp} = 4KV$) when the charging surface of the charging member faces areas to which an electrostatic latent image is not formed. As a result, it is not seen that Yamazaki, et al. discloses a first AC voltage or that, when a print signal is supplied to an image forming apparatus, the first AC voltage, a second AC voltage and the charging AC voltage are applied to charging means in order, the second AC voltage being higher peak-to-peak than the first AC voltage.

With respect to the cited combination, Adachi, et al. only teaches selecting an optimum AC voltage for image formation. Yamazaki, et al. only teaches switching between a cleaning bias and an image forming charge voltage. It is therefore not seen that the addition of Yamazaki, et al.'s switching between a cleaning bias and an image forming charge voltage without any suggestion of an ordered application of first, second and charging AC voltages to Adachi, et al. selection of only an optimum AC voltage for image formation in any manner suggests the feature of Claim 1 that a first AC voltage, a second AC voltage and a charging AC voltage are applied to the charging unit in that order when a print signal is supplied to an image forming apparatus with the second AC voltage having a

peak-to-peak voltage higher than that of the first voltage. It is therefore believed that Claim 1 as currently amended is completely distinguished from any combination of Adachi, et al. and Yamazaki, et al. and is allowable.

It is also respectfully submitted that the combination rejection is not well founded. The Examiner has provided a *rationalization* for combining the teachings of the cited art based on the benefits of doing so. A combination rejection is proper only when there is some suggestion or motivation in the cited art *per se* to cause one having ordinary skill in the art to combine the teachings of the cited art. There is nothing in the cited art which supports the position that it can be combined in the manner suggested. Even if the art could be so combined, the mere fact that the art can be combined is not sufficient if there is no suggestions in the art that such a combination is desirable. For example, see ACS Hospital Systems, Inc. v. Montefiore Hospital, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

In view of the foregoing, it is respectfully submitted that independent Claim 1 is allowable over the cited art whether taken individually or in combination.

Dependent Claims


Claims 2, 3, 5 through 12 and 20 depend either directly or indirectly from Claim 1 and are allowable by virtue of their dependency and in their own right for further defining Applicants' invention. Individual consideration of the dependent claims is respectfully requested.

Closing Comments

It is respectfully submitted that the pending claims are allowable over the art of record and that the application is in condition for allowance. Favorable reconsideration and early passage to issue of the present application are earnestly solicited.

Applicants' undersigned attorney, William M. Wannisky, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our New York office at the address shown below.

Respectfully submitted,



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